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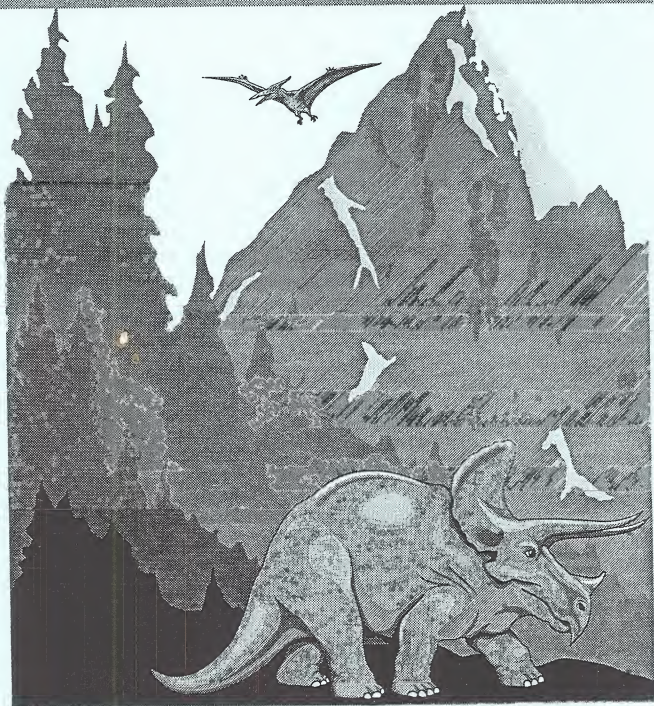
# MSTA

Montana Science Teachers Association

Dedicated to Quality  
Science Education

# Newsletter

Volume 8  
Number 6  
Winter 90-91



**About the Cover:** It's fun to speculate about the life that once roamed our great state or soared in Montana's Big Sky. Two such creatures are illustrated using EPS graphics. Order Ornithischia, Family Ceratopsidae, Genus *Triceratops* was an herbivore 30 feet in length and inhabited floodplains, forests and swamps during the Upper Cretaceous period. Order Archosauria, Family Pterosauridae, Genus *Pteranodon* *Ingens* was a fish-eating carnivore with a 20 foot wingspan and inhabited floodplains, seashores, and lakeshores during the Upper Cretaceous period too.

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## President's Message

We stand at the edge of the last decade of a marvelous and scary century - a century which has seen mankind radically change Earth's environment a century which has moved us from horse drawn carriages to flights that have traversed the solar system; a century which has seen changes in computation methods from that advanced marvel the slide rule to computers capable of more than a billion instructions per second. Not all the changes have been good and certainly not all the changes have been bad. The changes that have occurred within this century and even within this decade have increased man's knowledge more than the combined changes in knowledge for all of mankind's previous history.

We as science educators have an enormous task before us. That task is to once again spark the interest of young children to teach them to think about the way the world works. It will do us little good to bemoan the criticism of the public if we do not see substantial changes in the way students compute and think.

We must learn to shy away from vocabulary lists and multiple choice tests and insist on open ended questions that provoke thought and process development. We must learn to integrate our particular subject into the whole learning ability of the child so that students understand that reading writing and computation go hand in hand with discovery.

We must ensure that students understand that science is a verb meaning discovery. In a speech given to IBM officials last February 2, James E. Dezell said

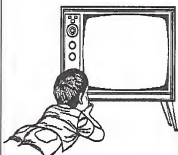
*that we have difficulty educating high tech kids in a low tech classroom and that the challenge of the next decade will be the challenge of motivation. He went on to say that we must make education more interesting than MTV.*

A great movement is on to restructure education in such a way that the teacher becomes the manager and the student becomes the worker, responsible for his or her own education. Many innovations in information technology will appear during this decade. Most of these will involve interactive multimedia linked to computers.

The jury has not even convened to assess this new and intriguing method of information delivery because the technology is so new. But one thing is clear and that is the way we have been doing business in the classrooms will inevitably change to utilize the latest technological advances and teachers must prepare themselves to meet these new challenges.

The NSF and the NSTA predict that we, as a nation, will produce 300 thousand to 700 thousand fewer scientists, technologists, and engineers than we will need by the year 2000 and that the only way to approach solving a shortfall of

**"We must  
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interesting  
than  
MTV."**



such magnitude is to go deeper into the ranks of our students for recruitment. Instead of encouraging only the A students to go into technical fields we must recruit the B and C students as well.

Similarly, we must do all we can to encourage women and minority students into scientific and technical careers.

In the West we have a special opportunity in that the least represented ethnic group in the sciences is the Native American population. It is up to us to set the stage for these youngsters to increase their participation. The difficulty we all face is that of being unprepared for the changes that will surely occur and which cannot not be predicted. Technology is changing so rapidly that most of the jobs available to students in the year 2000 don't even exist today.

This requires that we understand that lists and tons of facts will not suffice to prepare our students. Instead, we must seek ways to hone thinking skills.

This is a challenge we must and can meet. I encourage you to return to your classrooms filled with excitement and a spirit of renewal and the resolve to meet the challenges that lie ahead.

Gil Alexander

# MSTA Board Meeting Minutes

## MONTANA SCIENCE TEACHERS ASSOCIATION BOARD MEETING

October 17, 1990  
Holiday Inn  
Bozeman, MT

### Executive Board Members Present:

President: Rich Micheletto  
Region I Director: Russ Hartford  
President-elect: Gil Alexander  
Region II Director: Dave Puyear  
Past President: Kristy Bick  
Secretary:  
Region IV Director: Myra Miller  
Treasurer: Doug Shenkle  
Region V Director: Linda Robinson  
Region VI Director: Rich Menger

### Others Present:

Bob Briggs, Don Bick, Marilyn Alexander, Kurt Cunningham, *Project Wild Coordinator* for Montana FWP

### Call to Order:

President Rich Micheletto called the meeting to order at 7:30 p.m.

### Minutes:

Linda Robinson summarized the minutes of the previous Board Meeting. They were approved as summarized.

### Treasurer's Report:

Doug Shenkle gave the treasurer's report and provided handouts of income and expenditures. Our fiscal year runs from Jan 1-Dec 31. We have tax exempt status. The 1990 current balance is \$1475.82. A motion by Russ Hartford, seconded by Linda Robinson to accept the treasurer's report, carried. The report will be filed.

### Old Business:

1. Reports from conferences.  
Gil Alexander reported on the CAG Conference held in Florida in July.

Rich Micheletto reported on the NSTA Regional meeting.

Linda Robinson reported on the MAS meeting held on October 13, 1990. She announced that the spring meeting will be April 19-20 in Billings at Eastern Montana College. Papers are to be submitted by February 14. The banquet will be Friday evening. MAS provided \$400 for the State Presidential Awardees; however, they said that they won't donate for this again, since they will be fully sponsoring the Junior Academy. People wanting to submit articles for the MAS Newsletter need to send them to Linda.

### *Project Wild* and the Environmental Conference

Kurt Cunningham, *Project Wild Coordinator* for MT FWP, discussed the model curriculum which is in draft form for grades K-9. It is being distributed to project facilitators. He reported that he will be working on *Project Learning Tree* next. He announced the Environmental Conference to be held at Big Sky, April 11-13. He stated that an environmental group will take over the conference next year. This group will meet Jan. 23 from 6-9 p.m. at Smith School in Helena. Their second meeting will be at the Big Sky Conference. He asked for presenters at the Conference.

A motion by Gil Alexander, seconded by Kristy Bick, for MSTA to endorse the Environmental Conference, carried.

### Announcements

Montana State Science Fair is in Missoula on April 5-6.

National Science Teachers Association Convention is in Houston, March 27-April 1.

### MSTA position on affiliate groups:

It was noted that several new science organizations will be forming at this conference, namely one for chemistry and one for elementary teachers. It was stressed that MSTA wants to be the umbrella group and have all these discipline groups as affiliates. Board members were encouraged to attend these meetings and request that they remain members of MSTA, also.

### Elections to the MSTA Board:

Gil Alexander listed the positions open for election to the Board. He reported the candidates for each position. The Board was impressed with the slate of candidates and expressed regret that all could not be elected. It was suggested that on a one year trial basis that the unsuccessful candidates might work as non-voting associates with the newly elected Board Members. A motion by Myra Miller, seconded by Linda Robinson, to approve the Associate Board Member concept, carried with one dissenting vote. Doug Shenkle will check to see if the action required by this motion is constitutional.

### 1990 Presidential Awardees:

This year's national awardees are Judy Henry, elementary science, and Ray Hamilton, secondary science. MSTA has given a cash award for State Presidential Awardees in the past. It was reported that MAS donated \$400 and that \$1000 had

been received from other sources for these awards. A motion by Rich Menger, seconded by Doug Shenkle, to approve an award of \$400 for each of the four state winners, carried. The recognition plaques and cash awards will be presented at the Bob Makela Memorial Luncheon on Friday, October 19.

#### **Membership:**

Gil Alexander reported that Membership Chairperson, Debi Lund, had agreed to continue in the position for one more year. It was suggested that the membership chair needed to communicate via the bulletin board and might need the use of the IBM computer for maintaining these records.

#### **Model Science Curriculum Guide:**

Bob Briggs discussed progress on putting together the components of the Guide for Model Science Curriculum. The tool kit is at the printers now. There will also be a resource kit available. Boxes of resource materials will be available for check out by individual schools. He reported that it will be sent out to 500 principals and to County Superintendents. It can be copied and contains a computer disk of material to make the guide very usable.

**MSTA Newsletter:** Rich Menger requested articles for the newsletter. He reminded the Board that he is now able to reproduce photos very clearly.

#### **New Business:**

**Inservice Guide, Title Money and Eisenhower Funds.** Bob Briggs is providing an inservice Guide to districts so they will know what kinds of inservice programs will

qualify for use of Eisenhower Funds. He reported that some districts had not used all their funding and had to return them. He is proposing a requirement that districts establish committees with science teacher membership to determine use of Eisenhower funds. He also discussed distribution of Title monies and competition for them.

#### **Region Reports**

**Region I - Russ Hartford** reported that they had conducted another successful Share Fair for elementary and secondary science teachers. He wished that administrators would buy into it. Gil Alexander reported that Drive In Funds in the amount of \$300-\$400 are available from NSTA for conferences of this type.

**Region II - Dave Puyear** reported that Fred Seidensticker is in charge of their Regional Science Fair. National affiliation has not been requested for this fair.

**Region IV - The Science Olympiad** held at MSU in November was reported to be an excellent experience for students.

**Region V - Linda Robinson** reported that she is still having her meeting and hopes to get more people attending, hopefully from Red Lodge and Absarokee.

#### **Regional NSTA Meeting:**

A motion by Linda Robinson, seconded by Russ Hartford, to pay Rich Micheletto \$50 for gas for his travel to the Regional NSTA Meeting, carried.

#### **Extension of BEST:**

Bob Briggs reported on the status of the new BEST Grant. It has

been received by NSF and it will be December before he has any word from NSF. He is not hopeful that it will be funded in its present form, since the vitae were incomplete when it had to be submitted. He expected that it will have to be modified. He questioned the wisdom of MSTA having any more grants, since it was evident that MSTA had lost money on the BEST Grant. Following discussion, the consensus was that grants of this type are good for science education in Montana and should be pursued by MSTA.

Meeting adjourned at 11:05 p.m.

Respectfully submitted,

Kristy Bick, acting secretary

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#### **MONTANA SCIENCE TEACHERS ASSOCIATION ANNUAL GENERAL MEETING**

October 18, 1990  
Bozeman Jr. High  
Bozeman, MT

#### **Minutes**

Approximately 70 members were present.

#### **Call to Order:**

President Rich Micheletto called the meeting to order at 5:00 p.m. He opened the meeting with a warm note of appreciation for those who helped him during his term. He then handed over the presidency to President Gil Alexander.

#### **Old Business**

**Membership:** Gil Alexander reported that MSTA now has ap-

proximately 350 members.

#### **Luncheon:**

Alexander announced that the Bob Makela Memorial Luncheon will be Friday from 12:00 until 2:00 at the Baxter Hotel for a cost off \$5.50. Larry Kirkpatrick is the featured speaker. He will talk about the National Physics Olympiad which he coaches.

#### **Elections:**

Alexander listed the candidates for each office and for Regional Directorships and called for nominations from the floor. Seeing none, nominations were closed. Each candidate had the opportunity to have someone introduce them and speak in their behalf and/or speak for themselves

#### **Ballot**

##### **President-elect**

Russ Hartford  
Linda Robinson

##### **Secretary**

Larry Gursky  
Connie Wining

##### **Treasurer**

Dick Holmquist  
Darlene Ruble

##### **Region II Director**

Fred Seidensticker  
Phil Wolfe

##### **Region IV Director**

John Graves  
Robin Hutton

##### **Region VI Director**

Kim Lapp  
Richard Menger

#### **Those elected were:**

President-elect: Russ Hartford

Secretary: Larry Gursky

Treasurer: Dick Holmquist

Region II Director:

Fred Seidensticker

Region IV Director: John Graves

Region VI: Director Kim Lapp

Alexander, at the direction of the MSTA Board, encouraged unsuccessful candidates to serve on a one year trial basis as non-voting Associate Directors with the newly elected Regional Directors.

Alexander will appoint a replacement for Region I Director vacated by Russ Hartford by his election as President-elect.

Alexander thanked all the people who served on the 1988-1990 MSTA Board.

#### **Introductions:**

Alexander asked that all present introduce themselves to the rest of the members present at the meeting.

#### **Newsletter:**

Rich Menger encouraged people to send more articles for the newsletter.

#### **Involvement:**

Alexander encouraged people to become more involved in MSTA. He cited many opportunities for involvement in science activities available to everyone.

Announcements of some of the ways to get involved in science activities.

Conference in Moscow, Russia, of 500 teachers to present papers in August, 1991.

Science on Saturday, Wisconsin Workshops. See Alexander for tapes.

Science Olympiad, November 19-20.

Science Fairs, Great Falls, Havre, Butte, Billings and the State Fair in Missoula.

Junior Science and Humanities Symposium, in Salt Lake City in the spring.

Westinghouse Science Talent Search for seniors, Deadline: Dec. 10.

Duracell Competition

Eisenhower Grants

NSTA Awards Program for Teachers

Bob Briggs spoke about Project Wild, Project Learning Tree, PALS Workshop, Eisenhower Fund, Science inservice Guide Book, two Young Scholars Programs, Science Teaching in the Rockies (STIR), Project Aquatics, Montana Academy of Sciences and the Junior Academy of Sciences.

#### **New Business**

#### **Junior Academy:**

A motion by Jim Cusker, seconded by Carla Wambach, for MSTA to provide \$250 for the Junior Academy of Science, carried.

#### **Affiliate Groups:**

A motion by Larry Kirkpatrick, seconded by Jim Cusker, to encourage affiliate groups of MSTA to attend Board Meetings, carried.

Meeting adjourned at 6:27 p.m.

Respectfully submitted,

Kristy Bick, acting secretary

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#### **MONTANA SCIENCE TEACHERS ASSOCIATION BOARD MEETING**

October 19, 1990  
Baxter Hotel  
Bozeman, MT

#### **Minutes**

#### **Executive Board Members Present:**

President: Gil Alexander  
President-elect: Russ Hartford  
Past President: Rich Micheletto  
Region III Director:  
Steve Schumacher  
Secretary: Larry Gursky  
Region IV: Director: John Graves  
Treasurer: Dick Holmquist  
Region VI Director: Kim Lapp

#### **Representatives from each MSTA affiliate group:**

MABT (Biology): Jim Cusker  
MAPT (Physics): David and  
Joy-Lyn McDonald  
MESTA (Earth Science):  
Gil Alexander  
MACT (Chemistry):  
Marilyn Alexander  
MAEST (Elementary):  
John Graves

#### **Call to Order:**

President Gil Alexander called the meeting to order at 2:20 p.m., following the Bob Makela Memorial Luncheon.

#### **Minutes:**

The minutes of the previous evening's Board Meeting were not read.

#### **Treasurer's Report:**

The treasurer's report was not given.

#### **Old Business**

#### **Disposition of MSTA computer:**

MSTA has an IBM Model 30 computer which is designated for use by the president. Since the president already has an IBM computer, it was decided that it should be used by the treasurer for maintaining the treasury records, which are already on IBM, and for maintaining the membership data base.

#### **Appoint Region I Director Replacement:**

Mike Funk from Libby was appointed Region I Director to fill the vacancy left when Russ Hartford was elected to the position of President-elect. The president will thank Craig Kuchel for his willingness to be considered for this position.

#### **New Business**

#### **Restructuring the MSTA Board:**

The president introduced the issue of expanding the Board to include

the five affiliate groups. A motion by Kim Lapp, seconded by John Graves, to propose a constitutional amendment to restructure the Board by expansion to include the five affiliate groups with four representatives from the elementary affiliate; one representative from each of the earth science, biology, chemistry and physics affiliates; with one newsletter editor and with one State Science Supervisor.

Discussion centered around (1) cost of adding members to the Board, (2) requiring that all members of each affiliate be MSTA members, (3) method of advertising so that a vote on the proposed amendment to the constitution could be held at the October, 1991, General Meeting, (4) unified dues collection for MSTA and affiliate groups.

Motion carried, unanimously.

#### **Associate directors:**

It was reported that some former director candidates were not interested in becoming associate directors. It was suggested that the Regional Directors invite someone to work as an associate.

#### **Membership:**

Dick Holmquist will update the membership form and include it in each newsletter. A return envelope form was suggested. Affiliate groups asked to receive membership renewal mailing forms before the next general meeting.

#### **1991 Convention:**

Affiliate group representatives were asked to coordinate a drive to get presentation commitments for the convention prior to the spring Board Meeting.

#### Professional leave:

The president asked that each Board Member give him the name and address of the school contact person principal or superintendent, whom he could write to ask that Board Members receive professional leave to attend the spring Board Meeting.

#### Newsletter deadlines:

Each affiliate group was asked to submit at least two articles to the newsletter. The next newsletter deadline is December 10. Larry Gursky took responsibility for publishing a reminder about the newsletter deadlines on the bulletin board.

#### Spring mini-conference:

A motion by Rich Micheletto, seconded by Russ Hartford, that \$50 be provided for lunches for the spring mini-conference to be held to organize elementary teachers in Region 1, carried.

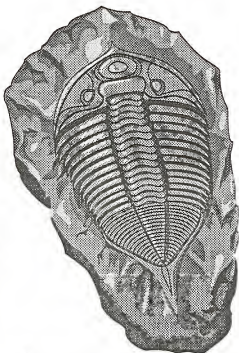
#### Next Board Meeting:

The next Board Meeting will be either at the Montana Academy of Sciences meeting in Billings, at the Environmental Education Workshop at Big Sky on April 11 and 12, or at the Montana Science Advisory Council meeting yet to be announced.

Meeting adjourned at 3:40 p.m.

Respectfully submitted,

Marilyn Alexander,  
acting secretary



## Rock • Mineral • Fossil Swap

The Montana Earth Science Teachers Association (MESTA) will have a ROCK SWAP at the next MEA—IPD con-

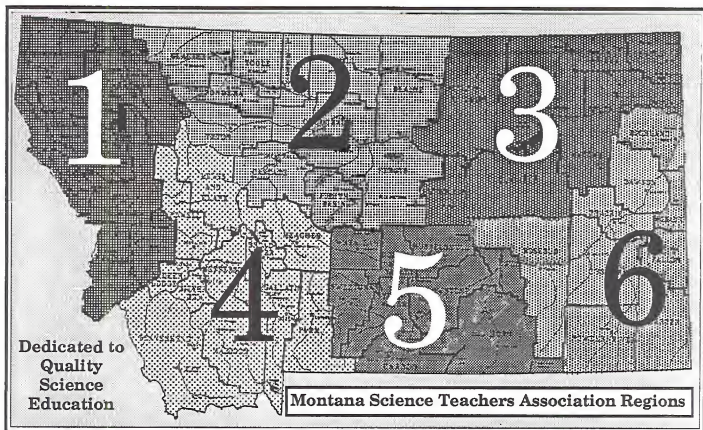
vention in Billings next year. Interested teachers should bring many samples of a specific rock, mineral or fossil from their home area to this sectional in exchange for different specimens from other areas. Bring as many specimens as you wish, 50 or more if possible. Remember, what is common in one area may be relatively rare in other parts of Montana, so any good quality specimen is needed.

MESTA will again sponsor an *Earth Science Share—A—Thon* at this convention. We would like to have about 10 teachers share one or more of their better activities at this sectional. If you would like to present at this sectional, send your topic, name and address to Bruce Baty, Hellgate High School, 900 South Higgins, Missoula, MT 59801.

Remember to collect some rocks/minerals/fossils when you get a chance and we'll see you in Billings next year.

Bruce Baty

# MSTA Constitution and Bylaws



## Constitution

### Article I Name

Section 1: The Name of this organization shall be the *Montana Science Teachers Association* and this is a chapter of the *National Science Teachers Association*.

### Article II Purposes

Section 1: The purpose of the *Montana Science Teachers Association* shall be the advancement, stimulation, extension, improvement, and coordination of science education in all fields of science at all educational levels. The Association shall not engage in any activity which would be inconsistent with the status of an educational, charitable and scientific organization as defined in Section 501 [c][3] of the Internal Revenue code of 1954 or any successor provision thereto.

### Article III Membership

Section 1: Membership is available to those engaged in the teaching of science and to those interested in science education

Section 2: The eligibility and classification of members shall be defined in the Bylaws.

### Article IV Organization and Officers

Section 1: The *Montana Science Teachers Association* shall be governed by a Board of Directors consisting of the elected officers and the elected directors and standing committee chairpersons as designated in the Bylaws.

Section 2: The officers of the *Montana Science Teachers Association* shall be President, Past President and/or President Elect, a Secretary and a Treasurer. These officers

shall constitute the Executive Committee.

Section 3: The powers and duties of officers and directors, together with the method of their election, shall be as prescribed in the Bylaws.

### Article V Quorum

Section 1: A majority of the members and/or Executive Committee shall constitute a quorum of the body.

Section 2: One fourth of the standing members present shall constitute a quorum of that body.

### Article VI Amendments

Section 1: Suggestions for amendments to the Constitution may originate in the Board of Directors or may be sent by any member of

Section 2: A proposed amendment, if approved by the Board of Directors of the Montana Science Teachers Association shall be submitted to the membership for adoption or rejection. The method to be used is outlined in the Bylaws.

Section 3: A proposed amendment may be submitted by a signed petition from 25 members and then shall be submitted to the membership for adoption or rejection.

## Bylaws

### Article I Name

Section 1: The Name of this organization shall be the *Montana Science Teachers Association* and this is a chapter of the National Science Teachers Association.

### Article II Purposes

Section 1: The purpose of the Montana Science Teachers Association shall be the advancement, stimulation, extension, improvement, and coordination of science education in all fields of science at all educational levels. The Association shall not engage in any activity which would be inconsistent with the status of an educational, charitable and scientific organization as defined in Section 501 [c][3] of the Internal Revenue code of 1954 or any successor provision thereto.

### Article III Membership

Section 1: Any person who is interested in the teaching of science in the state of Montana is eligible for a regular, student, corporate, or lifetime membership.

### Article IV Officers

Section 1: The officers of the organization shall be a President, Past President and/or President Elect, a Secretary and a Treasurer. In addition to these officers there shall be six elected directors.

Section 2: Only those members in good standing, shall be eligible to hold office, serve as directors, or serve as chairpersons of standing committees.

Section 3: The officers of the Montana Science Teachers Association shall constitute the Executive Committee.

Section 4: The elected officers, directors, and standing committee chairpersons shall constitute the Board of Directors.

### Article V Duties of the Officers

Section 1: Except as otherwise provided in the Bylaws the duties of the various officers shall be those which are customary for such offices.

Section 2: The President shall preside at all business sessions and all meeting of the Executive Committee and the Board of Directors. The President shall appoint standing committee chairpersons subject to ratification of the Executive Committee. The President under the direction of the Board of Directors, shall have the general charge of the affairs of the Association.

Section 3: The President Elect and/or Past President shall perform the duties of the President in his absence and shall serve as chairperson of the Program committee.

Section 4: The Secretary shall keep a correct record of the proceedings of the organization of the Executive Committee, and the Board of Directors.

The Secretary shall conduct the correspondence of the organization-

The Secretary shall send notices of regular and special meeting of the Executive Committee and the Board of Directors to the members concerned.

Section 5: The Treasurer shall be responsible for the collection of all dues, and shall receive all other monies due the association.

The Treasurer shall pay all bills authorized by the Executive Committee and shall serve as chairperson of the Budget Committee.

Section 6: Auditing Committee consisting of three members appointed by the Executive Committee shall audit the financial records annually.

Section 7: The Board of Directors shall transact the business, plan the overall program for the year, make recommendations regarding proposed amendments to the Bylaws, and devise and carry out measures for the growth and welfare of the organization.

Section 8: The Executive Committee shall have the power to act for the Board of Directors between meetings to carry out policies, and ratify appointments.

### Article VI Committees

Section 1: The standing committees shall be: Membership, Program, Finance, Nominating, Newsletter, Public Relations.

the organization to the Board.

**Section 2:** It shall be the duty of the Program Committee to initiate and implement well-coordinated programs in line with the purposes of the organization. The President Elect and/or Past President shall serve as the chairperson of the Program Committee.

**Section 3:** It shall be the duty of the Membership Committee to promote, expand, and stabilize the membership of the organization, and keep an accurate list of all members.

**Section 4:** It shall be the duty of the Finance Committee to prepare an annual budget for the organization, to have general supervision of all expenditures, and to assist the treasurer. The chairperson of the Finance Committee shall be a member ex officio, without vote, of all committees which disburse money.

**Section 5:** It shall be the duty of the Nominating Committee to prepare a slate of nominees and present this to the Board of Directors prior to the Annual Meeting.

**Section 6:** Committee members and chairpersons shall serve one-year terms unless extended by the Executive Committee.

#### **Article VII Nominations and Elections**

**Section 1:** The election of officers and six directors shall be by ballot. The Nominating Committee shall prepare and present an annual slate of nominees for election to the membership prior to the annual business meeting.

**Section 2:** All officers and directors shall hold office for two years.

**Section 3:** No officer shall hold the same office for more than two consecutive terms. An interval of two years shall elapse before a member is again eligible for re-election to the same office.

#### **Article VIII Meetings**

**Section 1:** There shall be two meetings of the Montana Science Teachers Association organization each year. One of these meetings shall be designated the annual business meeting.

**Section 2:** Additional special meetings may be scheduled by the Board of Directors as a need arises.

#### **Article IX Dues**

**Section 1:** The annual dues shall be two dollars (\$2) per capita, payable prior to or at the first fall meeting of the year or December first, whichever occurs first.

**Section 2:** An attendance fee, amount to be set by the Board of Directors, will be required of all non-members in attendance at meetings.

#### **Article X Fiscal Year**

**Section 1:** The fiscal year of this organization shall end as of the thirty-first of December of each year.

#### **Article XI Amendments**

**Section 1:** These bylaws may be amended by a two-third vote of the members present at any regular meeting, provided a copy of the proposed amendment shall have been sent to every member at least ten days before it is to be

voted upon.

**Section 2:** These bylaws may be amended at any meeting without

previous notice by a two-third vote of the total membership.

**Section 3:** A proposed amendment may be submitted by a signed petition from 25 members and then shall be submitted to the membership for adoption or rejection.

#### **Article XII Parliamentary Authority**

**Section 1:** In all questions of Parliamentary Law not covered by the constitution and bylaws, Robert's Rules of Order, Revised, shall prevail.

#### **Article XIII Dissolution of the Association**

**Section 1:** In the event of termination or dissolution of the Association, the Executive Board shall distribute the remaining assets of the Association to one or more of the following organizations or agencies: the National Foundation for the Improvement of Education, the National Science Foundation, any agency of the United States Government which is interested in science education, any organization which is exempt from taxation under Section 501 (c)(3) of the Internal Revenue code of 1954 (or successor provision there) and which is interested in science education.

Amendments that were proposed October, 1990 follow.



# Amendments to the Constitution

The Board decided to propose a constitutional amendment which will restructure the MSTA Board to include the following members.

Four Elementary representatives (elected from the Elementary Sub-group)  
One Earth Science representative  
One Biology representative  
One Chemistry representative  
One Physics representative

Each subject area representative will be chosen by that group. The group will not receive a voting representative unless all its members are MSTA Members. (This specifically targets MSAAPT and the newly formed Elementary group since they did not have MSTA membership as a pre-requisite for membership in their respective organizations).

Newsletter Editor's position be elevated to a board position because of the importance of that position and the necessity of input from that position.

The remaining positions would remain the same including the six directors elected at large and the officers.

This requires that several changes occur in the Constitution.

## Article IV Section 1: Organization and Officers

Change from: The Montana Science Teachers Association shall be governed by a Board of Directors consisting of the elected officers and the elected directors and standing committee chairpersons as designated in the Bylaws.

Change to: The Montana Science Teachers Association shall be governed by a Board of Directors consisting of the elected officers,

*the elected Regional Directors, The Subject Area Representatives, the Elementary Representatives, and the Newsletter Editor, as designated by the Bylaws. Standing Committees shall be established by the board and shall be chaired by board members appointed by the President.*

## Bylaws Article IV Section 1: Officers

Change from: Section 1: The officers of the organization shall be a President, Past President and/or President Elect, a Secretary and a Treasurer. In addition to these officers there shall be six elected directors.

*Change to: The officers of the organization shall be a President, Past President and/or President Elect, a Secretary and a Treasurer, six elected directors at large from the membership, four elementary representatives elected by that associated group, and one representative each from the subject areas earth science, biology, chemistry, and physics, as elected by each associated group, and the newsletter editor.*

## Article IV Section 4:

Change from: The elected officers, directors, and standing committee chairpersons shall constitute the Board of Directors.

Change to: The elected officers, directors, subject area representatives, elementary representatives and newsletter editor shall constitute the Board of Directors.

## Article V Section 5:

Change from: The Treasurer shall

be responsible for the collection of all dues, and shall receive all other monies due the association.

The Treasurer shall pay all bills authorized by the Executive Committee and shall serve as chairperson of the Budget Committee.

*Change to: The Treasurer shall be responsible for the collection of all monies due the association and shall maintain a current membership list of paid members. The Treasurer shall supply membership lists and/or mailing label lists to board members and the Office of Public Instruction, Science Specialist as needed.*

The Treasurer shall pay all bills authorized by the Executive Committee and shall serve as chairperson of the Budget Committee.

## Article VI Section 5: Committees

Change from: It shall be the duty of the Nominating Committee to prepare a slate of nominees and present this to the Board of Directors prior to the Annual Meeting.

Change to: It shall be the duty of the Nominating Committee to prepare a slate of nominees and present this to the Board of Directors prior to the Annual Meeting and shall prepare a ballot for the election to be used at that meeting.

## Article VII Section 3: Nominations and Elections

Change from: No Officer shall hold the same office for more than two consecutive terms. An interval of two years shall elapse before a member is again eligible for re-election to the same office.

Change to: No officer or board

member shall hold the same office for more than two consecutive terms. An Interval of two years shall elapse before a member is again eligible for re-election to the same office. *The Newsletter Editor is exempt from this regulation.*

Article IX  
Section 1:  
Dues

Change from: The annual dues shall be two dollars (\$2) per capita, payable prior to or at the first fall meeting of the year or December first, whichever occurs first.

Change to: The annual dues shall be *ten dollars (\$10)* per capita, payable prior to or at the first fall meeting of the year or December first, whichever occurs first.

Article XI  
Section I:  
Amendments

Change from: These bylaws may be amended by a two-third vote of the members present by any regular meeting, provided a copy of the proposed amendment shall have been sent to every member at least ten days before it is to be voted upon.

Change to: These bylaws, or *Constitution* may be amended by a two-third vote of the members present at the *fall meeting* provided a copy of the proposed amendment shall have been sent to every member at least ten days prior to the vote. *Publication in the MSTA Newsletter prior to the election shall constitute prior notification.*

All changes are italicized and are respectfully submitted by Gill Alexander, President, MSTA.

## Poor Science Teacher's Answer to the Video Microscope

Live specimens are always a good way to generate enthusiasm for the animal species. Live specimens of protozoa and invertebrates are no exception. If you do not have access to a video microscope, there is a cheap alternative. Deep-Well Projection Slides are convenient and are a neat way to demonstrate specimens.

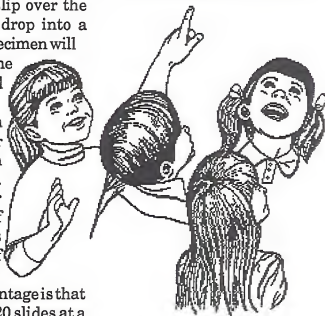
The only equipment needed is a 35mm slide projector. The deep well slide has a depression in which a specimen can be placed. Place the coverslip over the depression and drop into a projector. The specimen will be displayed on the screen alive and kicking.

There are a variety of other things you can place in the slide. The September 1989 edition of Carolina Tips has a variety of suggested uses. The only disadvantage is that you have to buy 20 slides at a time when all you need is one

or two. They can be purchased from Carolina or Wards.

I would be willing to take orders for the slides. I have about 10 left from the last time I bought some. They cost \$3.00 each. If someone wants one, send a check and a SASE (25¢ stamp should cover postage) to Alyson M. Mike Radley School Box 1280 East Helena, MT 59635

**Tell me,  
I forget.  
Show me, I  
remember.  
Involve  
me, I  
understand.**



# Activities to Share

## WOOFER BOTTLE

This is guaranteed to wake up anyone in your room. It is much more impressive with the lights out.

### Materials

5-6 gal plastic bottle (obtain from a bottled-water company)

30 ml of ethanol (ethyl alcohol)

### Procedure

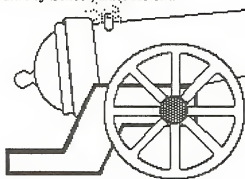
1. Place 30 ml of ethanol in the bottle.
2. Rotate the bottle on its side so that a mixture of ethanol vapor and air fills the bottle.
3. Pour out the excess ethanol in the sink.
4. Hold a match with tongs over the mouth of the bottle and ignite the vapors. **WEAR SAFETY GOGGLES!**



### Discussion

This is a great discrepant event. It can also be used with units on vapor pressure or the combustion that occurs in a car's engine.

Alyson M. Mike, Science  
Radley School, East Helena



## SLIME

There are a variety of ways to prepare slime. This one is quick and easy. I would suggest avoiding using the polyvinyl alcohol method as it is very time consuming and hard to dissolve.

### Materials

3 g Guar Gum  
Colored Water - I prefer green or red  
1 g Borax

### Procedure

1. Place 300 ml of colored water into a beaker.
2. Slowly add 3 g of guar gum with rapid stirring.
3. Dissolve 1 g of Borax in 30 ml of water
4. Add the Borax solution to the guar gum solution and stir and you have made slime.

Discussion: This can be broken down into smaller parts and used as a lab. It can be used with a polymer unit or as a discrepant event.

Alyson M. Mike, Science  
Radley School, East Helena



# Shared Activities...continued

## RAINBOW SALTS

This is an alternative to flame tests. It lasts longer and the kids can actually see the colors.

### Materials

Foil Tray  
HCl, dilute Boric acid  
Alcohol, methanol or ethanol  
Salts: Strontium chloride ( $\text{SrCl}_2$ )  
Copper chloride ( $\text{CuCl}_2$ )  
Potassium chloride ( $\text{KCl}$ )  
Sodium chloride ( $\text{NaCl}$ )  
Any others you have

### Procedure

1. Make a trough of 2-3 layers of foil and set on the tray.
2. Place a scoople of each salt in the trough. Space approximately 1" apart.
3. Place about 3-4 drops of HCl on each salt.
4. Pour the alcohol in the trough, enough to cover the bottom, using care not to wash the salts into each other.
5. Dim the lights and light the alcohol. the salts will burn for 3-4 minutes.

### Disposal

After all of the alcohol has burned, ball up the foil and throw away.

### Discussion

This is good as a discrepant event or in a discussion of flame tests and salts.



## GUN COTTON

This is similar to flash paper used by magicians. I suggest you make a large quantity because the kids will want you to do in again and again.

### Materials

450 ml Sulfuric Acid, Conc. ( $\text{H}_2\text{SO}_4$ )  
150 ml Nitric Acid, Conc. ( $\text{HNO}_3$ )  
12-15 g Cotton Balls  
Beaker Goggles  
Apron Gloves

### Procedure

1. In a hood or in an area with good ventilation, pour the sulfuric acid into the nitric acid. WEAR GLOVES & GOGGLES.
2. Allow to cool.
3. Immerse the cotton in the solution for approximately 12 hrs.
4. After 12 hours, pour off the acid and wash the cotton in running water for 2 hrs.
5. Squeeze out the water, fluff up the cotton and allow to dry.
6. Ignite a small quantity of the cotton with a match held with tongs at arm length

### Disposal

Dilute the acid solution with water. Add 1M sodium carbonate until no further carbon dioxide is evolved. Dilute with 20-fold excess of water.

### Discussion

This is a great discrepant event.

Alyson M. Mike, Science  
Radley School, East Helena



## Shared Activities...continued



### Capture-Recapture

#### Demonstration

Linda de Kort of Flathead High School reports that thanks to Keefer and Kleehammer in the October 90 edition of the NSTA Journal *Science Teacher* that she has found a low cost and short (30 minute) method of demonstrating how population counts are done using the mark-recapture technique. This technique estimates the population size by using the following equation:

$$N = \frac{C(M)}{R}$$

To start the lab, each group captures 10-20 packumins (M) and places a recognizable mark on their backs. Packumins are of course those silly styrofoam packaging material that inundates our schools in the fall. These marked individuals are returned to the population, and the box is shaken vigorously to allow for dispersal.

Now, as randomly as possible (eyes closed is best!) round up 10-20 packumins and record the number of recaptures (R). All packumins are returned to the box and the process is repeated for up to 10 trials. Thus, C is the cumulative total of the captured packumins, and R is the total number of recaptures.

Students can now estimate the size of their population by using the equation. Each group can report their estimate to you, at which time you can give them the

FIGURE 1. Sample data for the Boreal Forest (actual size is 150).

| Trial No. | C   | R |
|-----------|-----|---|
| 1         | 12  | 1 |
| 2         | 10  | 0 |
| 3         | 15  | 2 |
| 4         | 10  | 0 |
| 5         | 10  | 1 |
| 6         | 13  | 0 |
| 7         | 10  | 1 |
| 8         | 10  | 1 |
| 9         | 10  | 2 |
| 10        | 15  | 1 |
| Totals    | 115 | 9 |

$$N = \frac{C(M)}{R} = \frac{115(10)}{9} = 128$$

$$\% \text{ error} = \frac{128-150}{150} = -15\%$$

(The negative sign indicates an underestimate of the population.)

actual population size. Use this opportunity to introduce the calculation of per-cent error and to have students speculate as to how they could be more accurate.

As a time saver, ask students to remove and dispose of the marked and *dead* packumins from the box at the end of each period, and then add an equal number of new ones.

It is important to emphasize to students that the population estimate is nothing more than that, and that their calculations may vary significantly from the actual value.

Students may wish to research various methods used to mark populations of insects (ants are great), fish, birds, and mammals. Contact a local conservation officer at a wildlife refuge for more information.

Linda de Kort  
Biology Teacher  
Flathead High School  
Kalispell, Montana

# Shared Activities...continued

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## THE CANNON

Students like demos that have anything to do with explosions. This one should satisfy the desire for something that goes bang.

### Materials

- Pea-sized lump of Calcium carbide ( $\text{CaC}_2$ )
- 5 ml water, in a small beaker
- Cannon (direction below)
- Nerfball
- Ring stand and ring

### Procedure

Cannon Directions:

- PVC pipe @ 60 cm long, 2 inch diameter)
- PVC cap
- PVC glue

1. Glue the cap onto one end of the PVC pipe
2. Drill 1/4 inch hole midway from each end in the side of the pipe.

### Demo Directions

1. Lean pipe thru ring at a 30° angle with the hole facing up
2. Add 5 ml water to slanting pipe
3. Drop a small lump of  $\text{CaC}_2$  into the water in the pipe
4. Plug pipe with Nerfball
5. Wait 10 seconds
6. Place burning splint at small hole in side of pipe

WEAR SAFETY GOGGLES!

### Tips

PRACTICE before doing this one in class. You must wait for 10 seconds for the reaction to generate acetylene.

### Disposal

Make certain all reaction products are removed from pipe before *repeating* the experiment. To ensure this, add more water to the pipe in a hood or open window to allow excess acetylene to be generated. The solid products can be washed down the sink.

### Discussion

This is a very simple reaction that produces acetylene and a lot of energy; more than enough to propel the Nerf ball across a room! This can be used with such topics as energy, exothermic reactions, gas laws, and reaction rates.

Alyson M. Mike, Science  
Radley School, East Helena

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## STARCH SOLUTION MADE EASY

Making starch solutions has always been a pain. Besides the starch clumping up, it was time consuming and messy. Here's a quick easy way to make it.

### Materials

- Beaker/Container
- Distilled water - room temperature
- Spray Starch - yep, the ordinary kind used for ironing

### Procedure

1. Place enough distilled water into the beaker to equal the amount of solution needed.
2. Spray lots of the starch into the water; 10-15 seconds is usually long enough.
3. Stir to mix and let the foam settle.
4. Presto! The starch solution is ready.

Alyson M. Mike, Science  
Radley School, East Helena

# Black Box Demonstration

## An Initiation to Accuracy in Making Observations

### PROCEDURE



This activity can best be conducted as a demonstration with questions elicited from the class. It is designed to generate interest in science and is especially useful as a first-day-before-lab experience. With modification, it could be used as an individual investigation.

#### 1. Visual Observations

a. Instructor: *One of the most powerful tools of the scientist is his or her ability to make accurate, concise observations and to organize the resulting information obtained. Let's test our present ability to observe. I'd like you to examine, from your present vantage point the object I will hold in my hand. I will record the observations made on the chalkboard.*

#### b. Demonstration/Student Response

The instructor displays a small cardboard box to the class and invites them to offer a descriptive term based on their observations. Responses will include: color, shape, estimation of size, probable composition, etc. When most obvious responses have been given, the instructor moves the box quickly so that the audible sound of an object inside the box striking the box is heard. Immediate response: *There's something in the box!*

#### 2. Auditory Observations

a. Instructor: *Up to this point all of the observations you have made have been derived from the input of a single sense.*

*In science it is important to make observations using all of your senses. Your ears, your nose, your sense of touch...all provide you with important information concerning your environment. At this time, let's again make observations. But this time make the observations of the object inside the box based entirely from the sound it makes as I turn and rotate the box.*

#### b. Demonstration/Student Response

The instructor then moves the box so that the object within can slide or roll along each surface of the box. He/she then calls for interpretations of the sounds emitted which will characterize the object within the box and explain why the various sounds occur. Responses will include: *It has a round surface because it rolls. But it must have a flat surface as well because it slides.* The instructor will then ask what shape can account for both observations. Answer: *It must be shaped like a cylinder.* Other observations will include an estimation of the size of the object and the supposition that it must be of greater density than the box because of the *clunking* effect. It will also be suggested that the object has a smooth side and a rough side.

#### 3. Examination of Object in Box

a. Instructor: *Why didn't you suggest a color for the object in the box? Obviously some characteristics can be observed using technique while others cannot. Suggest technology which would permit us to identify the object within the box without opening it and without shaking it. (Response from students - x-rays, etc.) Scientists make use of all advancements to refine their ability to observe and yet in all cases they are as objective as possible just as were we in doing this exercise. And now let's see what was present within the box.*

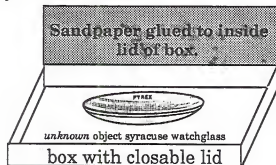
*continued from previous page...*

#### b. Demonstration/Student Response

Instructor displays the object within the box - a syracuse watchglass and notes how well the *observations* made by interpreting the sound of the object moving within the box correlated with those of the actual object. He/she asks *Why did you not predict the depression in this small cylinder?* Of course this observation could not be made with the restraints imposed in making observations. *You predicted that the object would have at least one rough surface, but it is perfectly smooth on all surfaces, how can you explain this?* Someone will then suggest that it was the box which had a rough inner surface which is indeed the case and the sandpaper side is revealed along with a caution to explore all possibilities in formulating explanations.

#### Summary

*Instructor: It is not likely that you will have an occasion to use your newly found powers of observation...although small children do become quite adept at identifying objects in boxes near Christmas time. However, it is important to remember that in science all of the senses are used in combination with the finest tools available to learn as much as we can concerning the world around us. As we work on any laboratory activity, remember to observe accurately and objectively and to record those observations. We will thus be using some of the same processes employed by a research scientist.*



The task of a good teacher is to establish constructive motivation, clarify learning goals, help students gain confidence that they can perform the learning tasks, help students to find intrinsic rewards in learning, diagnose difficulties, devise alternative learning experiences, and assist students to identify situations outside of school where they can appropriately practice what they learn in school.



Ralph W. Tyler in the Phi Delta Kappan,  
February 1977, p. 455.

# The Rainbow Lab

In this experiment you will be using three common household materials, water, vinegar, and ammonia water. An acid-base indicator has been added to one of the solutions. Notice that it is a different color depending upon which substance it is in. You will try to obtain up to 8 colors by varying the amounts of each solution that you add to a 1 x 8 strip.

## MATERIALS

1 X 8 well strip                      one plastic stir rod  
three labeled polyethylene pipets which contain the following solutions:

distilled water  
clear household ammonia water  
white distilled vinegar + universal indicator (the indicator is red in acid or blue in ammonia)  
an empty polyethylene pipet to collect any duplicate colors

## PROCEDURE

PUT YOUR GOGGLES AND APRON ON NOW!



1. Open up and fold back your cassette case exposing the contents of your case.
2. Place your 8 well plate in front of you and place the 4 polyethylene pipets next to your strip.
3. The colors can be made by varying the number of drops of ammonia, and or vinegar solution that you place in each well.
4. Make sure you mix each combination with your stir rod.
5. You may change the color in your wells by adding distilled water.

## QUESTIONS:

1. How many colors did you obtain, and what were they?
2. What reasons can you give for the color changes?
3. Which of the pipets contained the acid? The base? Explain.
4. What purpose did the universal indicator serve?
5. Name at least 3 commercial acid/base indicators. Name at least 3 natural indicators.  
it initially.

## Teachers Guide

This lab introduces the concept of acid and bases using materials that your students are already familiar with. Universal indicator is used to show how the pH can change depending upon how many drops of vinegar, ammonia, or water are added to each well.

## MATERIALS (FOR CLASS OF 30)

- 30 Polyethylene pipets for vinegar/universal indicator solution.
- 30 polyethylene pipets for ammonia hydroxide solution.
- 30 polyethylene pipets for distilled water.
- 30 polyethylene pipets for overflow/disposal purposes.
- 30 1 x 8 well strips.
- 30 plastic stirrers (pipet tips)
- 30 Cassette case (pipet holders)
- 250 mL 5% white distilled vinegar
- 250 mL clear household ammonia solution
- 250 mL distilled water

### PREPARATION OF SOLUTIONS

Universal Indicator solution (added to distilled vinegar to make a cherry red color or ammonia to make a dark blue color) (

#### OPTIONAL ALTERNATES)

250 mL 0.1 M Acetic Acid ( $\text{CH}_3\text{COOH}$ ) solution. (Hint) 6 mL Glacial Acetic acid added to water to make 250 mL of solution.

250 mL 0.1 M solution of Ammonium Hydroxide ( $\text{NH}_4\text{OH}$ ) solution. (Hint) 1.7 mL Concentrated Ammonium Hydroxide to water to make 250 mL of solution.

Universal Indicator may be prepared by combining the following: 10 mL methyl orange solution (0.1 g methyl orange/100 mL of water) 10 mL methyl red solution (0.3 g methyl red/ 100 mL ethanol) 10 mL bromthymol blue solution (0.6 g bromthymol blue/ 100 mL ethanol) 7 mL phenolphthalein solution (0.1 g phenolphthalein /100 mL water) 110 mL ethanol 53 mL water Universal Indicator can also be made from red cabbage by boiling the cabbage for about an hour and letting it cool to room temperature. If you want to preserve this solution for longer than a week, it may be frozen and then thawed as needed.

### LAB HINTS

Filling pipets, squeeze empty pipet, insert end into solution container. Release pressure to fill bulb three quarters full. Repeat same procedure for all solutions. Trim pipet tips by cutting long stem off to within two centimeter of the bulb.

Stirrs may be prepared in the following manner. Heat cut off ends from thin-stem pipets in burner flame and mash with pliers to form small flat spatula end. Ends can be trimmed with scissors to fit well openings.

### ANSWERS

1. You should be able to obtain eight shades of colors. Including: cherry red, pink, orange, yellow, green, light blue, & dark blue.
2. The colors change with the acidity and basicity of the various solutions. Changes in pH interact with several dyes in the Universal Indicator.
3. The Universal Indicator will show a red color in acidic solutions. The base is colorless because it has no indicator solution in
4. The Universal Indicator registers the change in acidity and basicity of the combining solutions. Changes in color register changes in pH.
5. Commercial indicators, Litmus, methyl orange, methyl red, phenolphthalein, malachite green, Alizarin yellow R etc. Natural indicators, Red cabbage juice, grape juice, fruit skins with color, various flower petals.

### HAZARDS

Try to avoid spills with solutions. Acetic acid and ammonia water can affect sensitive skin and adversely affect clothing. Flush spills with copious water.

### DISPOSAL

All solutions can be washed down drain with excess water.





# the DENALI PARKS of Alaska

AN ECOLOGICAL STUDY

BIOLOGY 193 2 CREDITS

*The ultimate Alaskan experience - explore a compelling and calling wilderness highlighted by "the Great One," a towering mountain peak. Hike the untrodden highcountry and camp along its alpine lakes. Raft a mighty glacial river yielding to its power. Witness bands of migrating caribou. Marvel as grizzly bear cubs romp and just-hatched ptarmigan chicks scamper on a tundra carpeted with wildflowers. Discover the wild animals and plants - they reveal the wilderness message. And always, always hope to take home, if even from a glimpse, the memory of a distant wolf and a better understanding of ourselves.*

Matanuska-Susitna Community Schools is offering the nature enthusiast an opportunity to study the natural history of Denali Parks - Denali National Park, with its abundant wildlife and Denali State Park, a backpacker's paradise of solitude. Credit, if desired, is provided by the Matanuska-Susitna College of the University of Alaska Anchorage.

Under the guidance of a professional naturalist/wildlife biologist, you will travel by train on the Alaska Railroad and by river rafts on this 12 day expedition. Emphasis will be on understanding the ecological parameters operating in the parks, with special attention on learning the bird, mammal, and flowering plant species. Field observation and recording techniques including photography will be stressed for interpreting natural phenomena.

This course is typically attended by career established individuals seeking an indepth and unique Alaskan outdoor learning experience. Members provide their own food, most camping gear, and train fare. Due to raft space limitations, 11 students maximum per class.

## DATES:

1st Class- prebrief: July 8-21

Trip highlights: wild flowers and birds

2nd Class- prebrief: August 12-25

Trip highlights: early fall color photography

NOTE: Prebriefs are held at the University of Alaska Anchorage; 3211 Providence Drive, Building A, Room 119 6:00-10:00 pm

## INSTRUCTOR:

John Wenger, Naturalist/Wildlife Biologist

## FEES:

Class fees: \$565.00

Tuition Fees \$15 (if you desire credit)

Transportation: Approximately \$120 for train, paid at the time of departure

NOTE: Complete information packet provided upon payment of class fees.

## QUESTIONS?

Call or write instructor,

John Wenger

6038 E. 12th, #10

Anchorage, Alaska 99504

(907) 337-0608 (M-F 6:30-8:30 am Anchorage

Local Time)

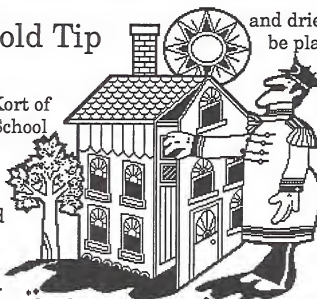
Office hours: 6:30-8:30am Tuesday-Friday

NOTE: All requested long distance returned calls are collect.

# Household Tip

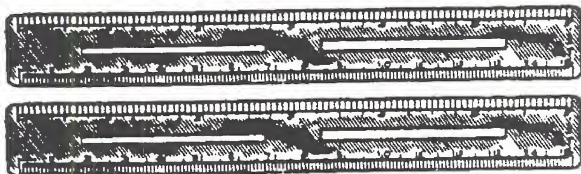
Linda de Kort of Flathead High School reports the following household tip, which she has modified from a recent NABT *Biology Teacher Journal*.

Before setting up individual lab stations, make a template on 8 by 11 inch paper (which can be duplicated) showing where all cleaned

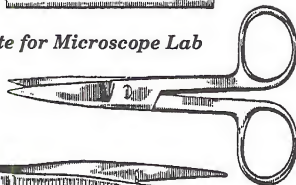


and dried equipment should be placed at the end of the lab. There is no confusion as to what equipment must be accounted for, and the stations are in great shape for the next class. This procedure also facilitates the checking of stations by the instructor. One glance will

do it! For those of us fortunate enough to have student lab assistants, this clarifies their job in setting up the lab.



*Template for Microscope Lab*



Coverslip

Coverslip

Slide

Slide

# CheMST Invitation

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Dear Chemistry Teachers:

During the 1990 MEA/MSTA Convention in Bozeman, a group of 18 chemistry teachers from across Montana met to form an organization of chemistry teachers. This group affiliated with the *Montana Science Teachers Association* (MSTA) and with the *American Chemical Society*, Montana Section (ACS). We believe that through this newly formed organization we can promote better communication among chemistry teachers provide learning opportunities for chemistry teachers, and generally enhance the teaching of chemistry in Montana.

We believe that our affiliation with MSTA and with ACS will strengthen our organization and allow us to provide services to you at the lowest cost. Our dues are \$5.00. A requirement of membership is that you are also an MSTA member, since we will be utilizing their newsletter as a major method of communicating with each other. This cuts our costs considerably.

We are presently planning the 1991 Convention which will be held in Billings in October. The Montana Chemistry Teachers are Planning chemistry-specific sectionals which should be of interest to you. If you have something that you would like to present please let me know as soon as possible. If you have ideas for bringing someone in for a workshop, I would like to know that also. It may seem early for starting the work for next year's convention, but I assure you that it does take a lot of time to set people identified who will present sectionals and workshops, and to coordinate all these schedules.

I hope that You will want to join *Montana Chemistry Teachers* (CheMST) and become an active proponent of chemistry education in Montana. We need YOU!

Sincerely,  
Marilyn Alexander, President  
*Montana Chemistry Teachers*

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**Montana Chemistry Teachers**  
**Membership Application**  
(please print)

**CheMST**

Name \_\_\_\_\_

Address \_\_\_\_\_

County \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone(    ) \_\_\_\_\_ Date \_\_\_\_\_

School Phone(    ) \_\_\_\_\_

MSTA Card No. \_\_\_\_\_

MSTA Membership paid for this year? \_\_\_\_\_

Return this statement  
with your check for \$5.00  
payable to CheMST:

Bruce Brown, Treasurer  
P.O. Box 742  
Colstrip, Montana 59323

Dues \$5.00 paid \_\_\_\_\_

---

## Research Grants for High School Projects

In conjunction with the *American Association for the Advancement of Science*, the *Montana Junior Academy of Science* has obtained a grant of \$700 for use by high school students in funding their science research projects. Applications for individual grants may be obtained from Jim Cusker, MAS V.P. Jr. Academy, Sentinel High School, 901 South Avenue West, Missoula, Montana 59801

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## The Montana Junior Academy of Science

Students who submitted papers for evaluation at the state level for the Jr. Science Symposium are invited to make an oral presentation of their research at the annual meeting of the Montana Academy of Science. Abstracts of their work will be published in the 1991 MAS Proceedings. The author of the top research paper will have the opportunity to present it at the national meeting of the American Jr. Academy the following year. Specific MJAS entry information for participation at the 1991 MAS annual meeting at Eastern Montana College in Billings on April 20th will be mailed later. As all students who submit papers will be scheduled for presentation, only those who plan to attend the annual meeting should apply. Last year's winner, Renee Doney of Helena High School, will present her paper *The Effects of UYB Radiation on Daphnia pulex*, at the national meeting in Washington, D.C. February 14-19, 1991.

Jim Cusker  
MAS Vice-President  
Junior Academy

## Thesis Indicates SciTeachers Don't Use Computers

Larry Hyslop, Director of Microcomputer Services at Western Montana College, completed his masters thesis during the school year 89-90 on Computer Usage in Montana's Science Classrooms. What follows is just an excerpt from this thesis. The entire thesis is available in MS-DOS Wordperfect format or ASCII.

### SCIENCE TEACHER RESULTS:

Fewer than half of science teachers (44%) use computers in their classroom. They reported the least number of computers available (average=3.8). Science teachers listed very little usable software and few benefits.

Science teachers checked *Computers have not proven beneficial* more than any other subject area. They found less importance in computers than the other subject areas.

The science methods professors agreed with them. The professors predicted 50 percent of science teachers use computers, and have an average of 2.5 computers to work with. Both groups agreed there is little computer use in the high school science classrooms.

The question is why? Could it be that the development of science curriculum software is behind other areas? Do science teachers have less access to their school's computers? Have science teachers seen less modeling of science computer use in their science training? These answers are not found in the study.

### RECOMMENDATIONS:

The use of such a powerful teaching tool should be investigated by all teachers in

Montana. Each teacher may find a classroom application where computers can help their teaching effectiveness. If barriers exist, individual teachers need to get past them to investigate any benefits.

Teachers who see the need for training in educational computing need to search it out. If training is not available, they need to press the University System as to why it is not available in their area.

Computer use has matured to the point that there are no particular subject areas which have a monopoly on using the available computers. The computers should be owned by all teachers and all efforts should be made to provide equal access to classes in all subject areas.

The study results have shown there are appropriate and useful software for each subject area. Teachers need to find out what their peers are finding useful and determine if the same software would prove useful for their own needs.

Everyone agrees the greatest problem is not having enough computers. In addressing the problem, it must be remembered the teacher is the center of the classroom, and the center of the learning process.

The professional educator in the college classroom is in the same position as the teacher in the public school. The professors of Montana's University System need to investigate the usefulness of computers in their own classrooms.

Appropriate college level training has to be made available in order for teachers to gain the experience needed to make the best use of these computers. The best way to provide training is to provide teaching models of computer use in the college classrooms. Colleges cannot expect to prepare teachers for future computer use if the professors doing the training do not make use of computers in their own teaching.

## SCIENCE TEACHERS HONORED

During the annual *Bob Makela Memorial Luncheon*, at the Baxter Hotel in Bozeman on October 19, MSTA recognized and honored seven science teachers. The teachers honored and receiving plaques were Kim Lapp, Jerry Williamson, Diane Cashell, John Graves, Walter Woolbaugh, Jane Frye, and Creighton Steiner.

Earning awards at the elementary level were Kim Lapp of Garfield School in Miles City and Jerry Williamson of Corral Creek School in Busby. Both Kim and Jerry are among those elementary teachers who received B.E.S.T. training. Kim has been elected to the MSTA board of directors representing Region VI.

Receiving awards at the middle/junior high level were Diane M. Cashell of Willson Middle School in Bozeman, John Graves of Monforton School near Bozeman, and Walter Woolbaugh of Manhattan School in Manhattan. Diane has been active with AIMS workshops, Olympics of the Mind, and Science Olympiad. John and Walter assisted in teaching in the B.E.S.T. program in 1989 at MSU. John was also recently elected to the MSTA board of directors representing Region IV.

The award recipients at the high school level were Jane Frye of Carter County High School in Ekalaka and Creighton Steiner of Browning High School in Browning. Jane has coached the CCHS Science Olympiad team with considerable success. The Carter County High School team earned the second place trophy in 1990. Creighton coaches the Browning Science Olympiad team as well as had students participate in the Junior Academy. He has also presented papers before the Montana Academy of Science.

**Congratulations to all the award recipients!**

Now is the time to nominate yourself or a science colleague for the MSTA Award of Recognition of Superior Achievement in Science Education. Applications for the 1991 awards may be obtained by writing or calling Richard Micheletto, 706 Polaris Way, Missoula, MT 59803, 408-728-2654.

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The MSTA Board of Directors wishes every teacher a very happy Holiday Season and New Year!

postage

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MSTA will help the individual participate in determining the destiny of science in Montana. The organization serves as a vehicle for educators from all professions to exert positive influences on young people. Many important decisions concerning the scope and direction of science education will be strongly influenced by our organization.

MSTA goals are to increase public awareness, interest and support of science education in Montana.

## Montana Science Teachers Association



### Membership Category:

|                 |          |
|-----------------|----------|
| 1 year          | \$ 10.00 |
| 2 years         | \$ 17.00 |
| 3 years         | \$ 24.00 |
| Life            | \$100.00 |
| Student/Retired | \$ 3.00  |

Membership dues are \$10.00 and are payable to Doug Shenkle, Treasurer, 1300 Billings Ave, Helena, Montana 59601. Membership includes a one-year subscription (4 issues) to *The Montana Science Teachers Association Newsletter*.